

# ENERGY INFORMATION SYSTEMS AND DIAGNOSTIC TOOLS

## Energy Information Systems and Diagnostic Tools

Energy Information Systems and Diagnostic Tools are emerging technologies to help monitor and evaluate building performance. Energy Information Systems combine software, data acquisition hardware, and communications systems to collect, analyze, and display building information to aid managers and utilities in reducing energy use and costs. Typical architecture is shown in Figure 1.

Diagnostic tools help with

- data collection
- visualization, and
- analysis, for continuous assessment of building performance.

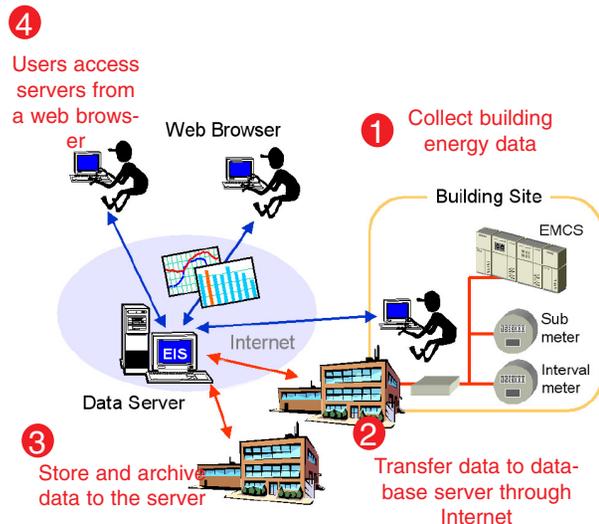


Figure 1. Typical Architecture of EIS

## Guides for Web-Based EIS and Emerging Diagnostic Tools

Berkeley Lab created two guides that compare, evaluate, and classify EIS and diagnostic tools and techniques. *Web-Based Energy Information Systems for Energy Management and Demand Response* and a *Comparative Guide to Emerging Diagnostic Tools for Large Commercial HVAC Systems* are now available.

The *EIS Guide* provides a technical overview of currently available EIS products. It summarizes key features in today's EIS, along with a categorization framework to understand the relationships among EIS, Energy Management and Control Systems (EMCS), Demand Response (DR), and similar technologies (Figure 2).

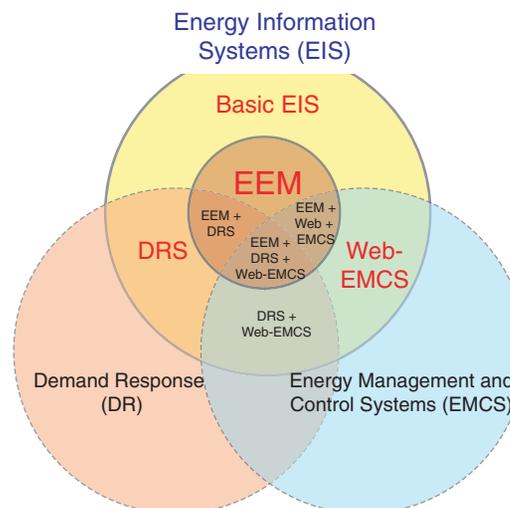


Figure 2. Types of EIS and related fields.

## Who Benefits?

The main purposes of the *Guides* are to:

- Help potential tool users gain an understanding of this new technology, EIS, and key diagnostic capabilities that affect tool implementation with EMCS data
- Provide tool developers with feedback by identifying important features and needs for future research

Effective use of energy information systems and diagnostic tools can:

- Reduce building energy consumption and cost by 5 to 20% or more
- Lower operations and maintenance costs
- Improve occupant comfort
- Better indoor environmental quality

## Diagnostic Tools

Diagnostic tools aid detection and diagnosis of operational problems for large HVAC systems utilizing trend data from energy management control system (EMCS) or other monitoring systems. The *Diagnostic Tools Guide* describes how diagnostic tools summarize relevant performance metrics, display plots for manual analysis, and perform automated diagnostic procedures.

# INTERESTED?

## Energy Information Systems & Diagnostic Tools

**Building engineers and owners** can use the *Guides* to help them understand where improvements and savings are possible.

**Energy consultants** can use the *Guides* as a tool to improve energy performance.

**EMCS manufacturers, EIS, and diagnostic tool developers** can use the information to improve their products.

**Facility managers and building owners** can use the *EIS Guide* to help evaluate how to use EIS in their buildings

**Control manufacturers, engineers, and designers** can use the *Diagnostics Tools Guide* to develop and implement diagnostic techniques in new and existing buildings.

You can download the *Guides* from these websites:

*Comparative Guide to Emerging Diagnostic Tools for Large Commercial HVAC Systems*  
<http://buildings.lbl.gov/hpcbs/pubs/LBNL-48629.pdf>

*Web-based Energy Information Systems for Energy Management and Demand Response in Commercial Buildings*  
[http://buildings.lbl.gov/hpcbs/pubs/E5P2T1b5\\_LBNL52510.pdf](http://buildings.lbl.gov/hpcbs/pubs/E5P2T1b5_LBNL52510.pdf)

This project is part of LBNL's High-Performance Commercial Building Systems program, a three-year public-private research initiative targeting substantial reductions in the energy costs of commercial buildings.

For access to all program results, see:  
<http://buildings.lbl.gov/hpcbs>



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